



INL is a founding member of the Idaho Science, Technology, Engineering, Mathematics (i-STEM) initiative, which recently held Idaho Energy Workshops for Educators in northern and southern Idaho.

i-STEM: INL helps train and inspire tomorrow's scientists and engineers

by Brett Stone, *INL Communications & Governmental Affairs intern*

Behind every iPod, nuclear power plant, pacemaker and telecommunications satellite are many scientists, engineers and technicians. Each was once a child who likely dreamed of doing "big" things when he or she grew up.

But big dreams require big effort and good training. To achieve world-changing success, each of these children had to gain education and training in the fields of science, technology, engineering and math (STEM). Idaho National Laboratory is helping today's dreamers by playing a critical role in supporting STEM education.

INL is a founding member of the Idaho Science, Technology, Engineering, Mathematics (i-STEM) initiative, a growing partnership of educators, government and businesses working to improve science, technology, engineering and math education in the state. Besides INL, members include the state universities, the state Department of Education, and about 25 other public and private organizations. The group met last year to discuss their mutual concerns of preparing the next generation of STEM leaders.

That meeting was the birth of i-STEM — an ambitious new program that aims to prepare Idaho students from an early age to compete for global opportunities and to return the benefits to the state.

An uphill climb

Help with STEM education couldn't come at a better time. Only 28 percent of Idaho high school graduates go on to college and stay past their first year. Fewer still are studying in fields related to STEM. According to [CNN Money](#), "only 17% of high school seniors are both interested in STEM majors and have attained math proficiency. Even among students who begin college pursuing a STEM degree, only half wind up with one."



One curriculum strand at the north Idaho i-STEM institute focused on the mathematics and ecology of gold mining in Idaho.

Meanwhile, the [U.S. Bureau of Labor Statistics](#) predicts that of the 20 occupations with highest projected growth rates in the next decade, five are directly related to STEM, including the top two (biomedical engineering and network systems and data communications analysis).

Currently, many of the openings in these fields are being filled by graduates from abroad as countries like China and India increase the number of students graduating in STEM fields. In response, i-STEM partners looked at how they could make the biggest impact possible on Idaho students. Their conclusion was to help those who influence the most students most profoundly — teachers.

Leading the charge

Anne Seifert, a veteran educator with 30-plus years of teaching experience in three different states, estimates that one teacher directly impacts 25 (in elementary school) to 150 (in most middle schools) students per day. Seifert, i-STEM executive director and STEM education coordinator at INL, said that over several semesters and years of teaching, an educator's cumulative effect is staggering. That is why i-STEM focuses on providing Idaho teachers the training and resources they need.

"As the i-STEM partners began developing the initiative, teachers said, 'We've done so much with so little for so long,' and so they welcome the support," Seifert said. "Teachers are working to meet state standards. We are not asking them to add one more thing to their plate. We are providing resources and materials that support their needs and the needs of their students. All i-STEM curricula are aligned to state standards and relevant."

In mid July, i-STEM brought together 300 Idaho educators to an expense-paid, three-day institute packed with expert presentations, hands-on workshops and best-practice sharing sessions.



NASA Education Specialist Tony Leavitt helped teachers assemble rocket launchers to use in classroom activities on rocket design and engineering.

Teachers also got free kits to take back to their schools, and participants received two college credits toward recertification, the cost of which was covered by the i-STEM partners.

"It's very, very exciting, especially with budget cuts right now," said Trina Caudle, principal of Skyline High School in Idaho Falls. Caudle, who's worked in education for 21 years in Idaho and Alaska, said today's students are "tech natives." This kind of program will be great for a generation of students that is always asking, "How am I ever going to use this?" she said. "Getting into the science and solving the problems themselves — that always excites kids."

The recent "Navigating the World of i-STEM" institutes took place in two different locations — [North Idaho College](#) in Coeur d'Alene and the [College of Southern Idaho](#) in Twin Falls.

"The need is there," said Seifert. "Registration filled up quickly and several educators were on a waiting list."

The original plan was to sponsor only one institute during the first summer. But i-STEM added a second center after educators showed strong interest, a venue became available in north Idaho and more funding flowed in. If funding can be arranged, organizers hope to offer at least two institutes each summer.

What educators experienced

Some portions of the institutes differed. For example, mining and forestry technologies were discussed more in Coeur d'Alene, where those industries are more prevalent. At Twin Falls, more emphasis was placed on energy production and use.



Teachers learned how to integrate rocketry into classroom lessons emphasizing science, technology, engineering and math (STEM).

The institutes included presentations from groups such as the JASON project, founded by oceanographer and Titanic discoverer Dr. Robert Ballard. Experts also presented teachers with the latest knowledge on how students learn about science.

Among the presenters, New York Times best-selling author and brain scientist [John Medina](#) talked about the connection between brain research and learning. Mike Klentschy, a former UCLA researcher and school superintendent who was named Administrator of the Year in 2005 by the [National Science Education Leadership Association](#), presented on cross-curriculum application and how to use science journals in the classroom. David Shepard, educational expert and author of, "[The Middle Matters](#)," also presented. Organizers also put together a showcase panel about best practices from experts and award-winning teachers.

Continuing Support

With the summer institute over, teachers now will have access to mentors who can help them throughout the school year as they strive to integrate the new curricula into their classrooms. As the effort continues and grows, libraries of STEM curriculum materials — science kits, books and projects — will be built up at community colleges. This will allow teachers to check out a great variety of materials they normally would not have access to because of cost, space or other factors.

The first two of these libraries will be located at College of Southern Idaho and North Idaho College i-STEM centers. Eventually, organizers hope to establish six different libraries strategically across the state to allow as many teachers access to the materials as possible.

"i-STEM is not just drive-in, drive-out training," said Seifert of the summer institutes. "It's ongoing, sustained support, resources and professional development for the teachers."

For the next generation of Idaho dreamers, this support means they're that much closer to reaching a brighter future.

[Feature Archive](#)



Teachers practiced geocaching, an outdoor activity using a Global Positioning System (GPS) to hide and seek containers called geocaches.